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USPA RECORDS CENTER REGION 5



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Mr. H. L. Finch - St. Louis Park

Indianapolis

October 19, 1965

O. F. Lester

ST. LOUIS PARK - OPERATING PROCEDURES

I have compiled a rough draft of the Aracanda Anode Pitch operating procedure that we had discussed during my visit last week. This is essentially a revision of the original procedure of 1955 and 1957 to bring it up to date and in the form that I would now like it to be. Copies are attached and I would appreciate if your people would go over it for corrections. This would include particularly the shipping instruction section to assure that those are the procedures you are now following.

The basic intent is to have a fairly specific operating procedure which your plant will be expected to follow explicitly. It should be sufficiently general to take care of most situations in raw materials, but sufficiently specific so that the principle type and level of operating conditions are fixed. The procedure would then be changed should there be a necessity to maintain pitch uniformity. The operating procedure will then tie in with the other areas of quality control that we have to institute within the next few months. You do have a separate still firing procedure which would be used in conjunction with this specific product operating procedure. Ultimately then, the daily still operation log, the weekly operating condition summary and control chart will all be a part of this program.

I would appreciate if you would send this back shortly with appropriate corrections.

Very truly yours,

O. F. Lester

CR/AS

cc: Mr. H. L. Davis - St. Louis Park
Mr. H. McConnell - Nally Lab.

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PRINCIPLE OF MANUFACTURE

The pitch is made by blending. The base pitch is made by the distillation of a low, 4-6° benzene, insoluble tar with roasting for 1-3 hours at 455-473°C, to a softening point of 110-120°C C/A. The base pitch is blended with Gary pitch of 63-65°C C/A S.P. and 15-20% benzene insolubles to a softening point of 97-100°C C/A.

The finished pitch is cooled in 1-2 carload batches in steel pails and shipped in lump form in boxcars.

SPECIFICATIONS AND ANALYTICAL METHODS

<u>Characteristic</u>	<u>Analytical Method</u>	<u>Specification</u>	<u>Manufacturing Tolerance</u>
Softening Point °C, C/A	10-XO-14 Barrett D-7	95-100	97-100
Benzene Insoluble	10-XO-22 Pechiney Method	25% Min.	23% Min.
Quinoline Insoluble	10-XO-23 Railly #534	10% Max.	7.5% Max.
Beta Resin	B.I. - Q.I.	20% Min.	22% Min.
Coking Value	10-XO-23 Pechiney Method	50% Min.	50% Min.
Sulfur	ASTM D 272-48 Eschka	1.00% Max.	0.6% Max.
Ash	?	0.25% Max.	0.20% Max.
Distillation 0-270	10-XO-24 Pechiney Method	15 Max.	15 Max.
		6% Max.	5% Max.
Water	10-XO-79 ASTM D 95-56T	0.05% Max.	Dry when shipped

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OPERATING PROCEDURE

The pitch is usually made in four still batches, using 7½ x 16 stills modified with fire tubes, fired by gas with oil as a secondary intermittent fuel. The stills are operated on a 2½ hour cycle, and charged, shortly after being blown, at 7-3 a.m., taking 20-25 minutes per still. They are charged hot, beginning with the heads on, with the vapor line open to 13 inches out, equivalent to 4350 gallons at 60°F. Charging is from a storage tank of batches of tar, blended if necessary to maintain uniformity.

A sample of each charge should be checked for specific gravity, and a sample of each batch is checked for benzene and quinoline insolubles and specific gravity.

Still firing is begun at about 3:00 P.M. with initial steam agitation at 1½-1½ turn and continues the steam until well into the water cut when it is 18 cut off. A water cut is taken first, then a $\frac{1}{2}$ pint oil cut of ½" gas or 2½" gas or 200 gallons is taken separately. No steam is used through the oil cut until about 2½ hour before the breaking period. Still control is based on distillate removal, taking 3 pints 17" or 2½" gallons of oil including the light oil, but not the water cut, to result in a base pitch softening point of 110-120°C. The stills are fired to a liquid temperature of 45-50°C, then held for heat treatment at this temperature, by intermittent firing, for 1-3 hours. After heat treatment, the burners are cut off and shut down and steam agitation for distillation is continued until the required amount of oil has been removed, after which it is stopped. The point is about 11-12 hours after firing was begun. The average firing rate from 100-350°C is 180/gas/hour, and the average oil rate from 250-400°C is 250 gallons/hour.

The exact operating conditions such as total oil to the nearest inch, heating temperature to the nearest degree, and soaking time in minutes are the basic variable control, and are correlated to the exact character of the tar, so that those conditions will be fixed and specified in the individual daily operating instructions to the still operators.

The softening point by copper bar or cube-indenter should be checked on individual samples from each still. The stills are blown at 7:00 A.M. to the articulated, non-insulated, 2½" x 2½" silicon mix tank or cooler, generally requiring ½ minutes/still. No soft pitch is initially added to the mix tank, but an "8" level from the last batch remains. After blowing the mix tank is agitated a minimum of 15-60 minutes, then sampled, and checked in the laboratory for softening point. On the basis of this result, blending pitch is purged from storage to adjust the softening point to 97-98°C. After agitation and another 15-60 minute agitation period, the material is sampled and rechecked for softening point, which is usually satisfactory. If high, more blending pitch would be added, and if low the batch would be dropped on top of it in the bay. Agitation of the old tank is continuous until after the pitch is purged to the pans.

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The drop line is electrically heated and is turned on 2 hours prior to dropping, and left on until the drop is complete. The line is blown and checked with steam before and after dropping, only to check that it is open. The pitch is dropped after 4:00 p.m. in respect to the neighborhood for fume control. Dropping temperature limits are 190-230°F. If it appears the temperature will be low at 4:00 p.m., agitation is stopped and if it is high, the drop is delayed. The temperature will vary seasonally.

The finished pitch batch of 63-70 tons is dropped to one of three bays, operating alternately, so that the pitch is dug on the third day. The 50 ton car is loaded and the remaining 15-20 tons are pushed to the end of the bay until an extra carload has accumulated. Water sprays are used on the bay from May through September, starting to spray about 30-60 minutes after dropping and continuing intermittently if necessary to prevent the buildup of a water layer over the pitch. The limiting maximum temperature of the pitch for loading is 95°F. At higher temperatures the pitch lumps will fuse during transit. The maximum permissible lump size is 6", which is controlled by the air chisel operator while breaking the pitch. It may be necessary to use an additional man to break lumps in the car, if climbing and pitch depth conditions change.

A sample is chopped from the full depth of the bay for analysis and retention, as representative of the shipment.

SHIPPING INSTRUCTIONS

The pitch is shipped, preferably in 50 foot boxcars with steel floors, using steel bulkheads or grain doors at each side to keep the center of the car clear. The maximum load on a 50 foot car is about 56 tons, and the minimum for the tariff classification is 45 tons. The cars are weighed light and full by arrangement with the railroad.

Monthly releases from Anaconda against the contract are generally received at the St. Louis Park Refinery by the 20th of the preceding month. The Manager acknowledges by letter the release to Mr. H. D. C. E. Taylor Woster, Assistant Works Manager, Conkelley, Mont., with copies of the letter to P. C. Reilly, C. F. Lecher, Jr. F. J. Roots, Mr. Dan Trieff, Mr. D. G. Miller, and GC-OSM Department.

Shipments are routed C&NW-Mpls-CN to Columbia Falls, Montana.

The invoice in quadruplicate and copy of the bill of lading are sent when weights are received to the Anaconda Aluminum Company, Butte, Montana, with copies of the invoice to Mr. A. O. Woster and Mr. Vuscovitch (Traffic Manager) at Anaconda Aluminum Company, Conkelley (Columbia Falls) Montana. Additional copies of the invoice are sent within Mailly to White Plains, Vancouver, Indianapolis, Granite City-E. Z. Goodman, and GC-OSM Department.

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Copies of the analysis on each car are forwarded to Anaconda-Y.O. Voster,
Bally-Vancouver, and C. F. Lechner. The softening point, benzene and
quinoline insolubles and coking values are reported on each car. The
viscosity in centipoises at 160°C is checked and reported on a composite
of five successive shipments.

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